

**NSF Awards Prairie View A&M \$1 Million For New Biology Research**  
*PVAMU's College of Agriculture and Human Sciences and Department of Chemical  
Engineering Awarded \$1 Million to Conduct Research in an Emerging Science –  
Synthetic Biology*

**PRAIRIE VIEW, Texas** – Prairie View A&M University is a major collaborator in a new research center being launched this summer at the University of California, Berkeley that will focus on an emerging science—synthetic biology.

Funded by a grant from the National Science Foundation (NSF), the Synthetic Biology Research Center, or SynBERC, is gathering pioneers in the field of synthetic biology from around the United States into a unique “biological-engineering” center. One of the goals of the research being conducted for this project at Prairie View A&M and a small number of other universities is to build cancer-killing bacteria.

The NSF awarded a total of \$16 million to the SynBERC over a five year period. PVAMU will receive a total of \$1 million of this amount, with additional funding to be awarded during the implementation of the project. Dr. Raul Cuero, research scientist and distinguished professor in the College of Agriculture and Human Sciences' Cooperative Agricultural Research Center, is the principal investigator and leader of the funded project at Prairie View A&M, and Dr. Michael Gyamerah, assistant professor in the College of Engineering's Chemical Engineering Department at Prairie View A&M is the co-investigator in this cutting edge research.

Other SynBERC collaborators include the Massachusetts Institute of Technology (MIT), Harvard University and the University of California-Berkeley, who will share the rest of the grant funds. “Each of the center collaborators received an amount to conduct research unique to their areas of expertise,” said Cuero.

Synthetic biology is the fusion of basic biological sciences, such as microbiology, and molecular biology with engineering, and computational modeling, aiming to design and construct new biological entities such as cells, molecules, enzymes, and genetic circuits, or the redesign of existing biological systems. The field builds upon advances in molecular, cell and systems biology and seeks to transform biology in the same way that synthesis transformed chemistry and that integrated circuit design transformed computing.

Prior to receiving the award from the NSF, Dr. Cuero, who has an extensive background in conducting microbial and environmental biotechnology research, used current techniques in microbiology, molecular biology and electro-chemistry, which are essential to synthetic biology. Dr. Gyamerah, who is an engineer, had many brainstorming sessions with colleagues at the SynBERC about the implementation of the synthetic biology concept. These sessions led to the group being asked to write an independent project based on each scientist's and group researcher's strengths in order to be presented

to the NSF for funding. A proposal was submitted and funded with each university collaborator managing its own projects.

“The proposal that we submitted to the NSF focused on synthetic biology using microorganisms as biosensors and how this new science is applied to environmental studies such as the identification of non-detectable concentrations of chemicals and the detection of toxic chemicals in the environment and in agricultural products,” said Cuero. “This project can also be used to identify new sources of fuel energy. The participation of engineering is very important, because it will give the practical application of the research, and Dr. Gyamerah brings a great deal of necessary expertise on chemical engineering.”

“As a new paradigm of science, synthetic biology is going to change the direction of science, technology, industry and the economy,” said Cuero. “Research in this area will transform the current biotechnology into the new advanced molecular phase. The research will also impact high-tech, pharmaceutical, medical, chemical and agricultural industries by providing less expensive drugs and fuels, novel materials, biological sensors and replacement organs from stem cells. Twelve industry firms have already committed to being members of SynBERC, including suppliers of genetic tools and custom DNA synthesis, pharmaceutical and chemical companies and businesses interested in developing simulation software for the field of synthetic biology.”

Training students to join the ranks of synthetic biologists is an important goal of the program. Members of the team will create curricula on synthetic biology for grades K-12 and community college students, as well as for undergraduates and graduate students, encouraging the participation of minority and underrepresented students in particular.

Since the beginning of the summer, Dr. Cuero has trained a selected group of Prairie View A&M students to conduct research in applying the concept of synthetic biology. This group of students will go to MIT in November of this year to compete for the iGEM (The International Genetically Engineered Machine) competition. Founded in 2003, the iGEM competition provides an international arena where student teams compete to design and assemble engineered machines using advanced genetic components and technologies. Prairie View A&M students will compete against prestigious universities including Harvard, MIT, University of California, Berkeley, University of Texas, Duke, Princeton and universities in Africa, Japan and Canada. “Just to be part of this elite scientific competition is a triumph, and I am excited,” Cuero said.

“This is why our collaboration in the SynBERC is so important,” said Cuero. Prairie View A&M University is the only historically black college or university (HBCU) at this time involved in training students and conducting research in synthetic biology. In fact, as part of the university’s involvement in this project, it will train faculty and students at various HBCUs in the United States on how synthetic biology can be used. Prairie View A&M’s research in the SynBERC will begin this fall and training will start in the summer of 2007.

“Prairie View A&M University’s involvement in synthetic biology research is very significant because it will not only give our university added scientific and technological prestige, it will also enhance opportunities for enrollment of students and potential students to participate in this latest field of science and will open up additional job opportunities for them,” said Dr. Linda Williams-Willis, dean, College of Agriculture and Human Sciences.

To learn more about the Synthetic Biology Engineering Research Center collaboration, visit the Synthetic Biology Engineering Research Center, or SynBERC at <http://www.synberc.org>.

**ABOUT PRAIRIE VIEW A&M UNIVERSITY:**

Founded in 1876, Prairie View A&M University is the second oldest public institution of higher education in Texas. With an established reputation for producing thousands of engineers, nurses and educators, PVAMU offers baccalaureate degrees in 50 academic majors, 35 master’s degrees and four doctoral degree programs through nine colleges and schools. A member of the Texas A&M University System, the university is dedicated to fulfilling its land-grant mission of achieving excellence in teaching, research and service. During the university’s 130-year history, some 47,000 academic degrees have been awarded. For more information regarding PVAMU, visit [www.pvamu.edu](http://www.pvamu.edu).